

**SOUTHERN AUSTRALIAN GASTROPODA**  
**PART I. STREPTONEURA**

By BERNARD C. COTTON

[Read 14 June 1945]

PLATES XII AND XIII

The following species have been picked from dredgings and material collected by the late Sir Joseph Verco, the author and others. Although sorting and identifying the minutae from shell sand is a slow process the results are well worth while. In this paper a number of new and definite localities are recorded and observations on the variability of species noted. This paper covers only preliminary notes relating to the subclass Streptoneura.

**Scissurona vincentiana** sp. nov.

Pl. xii, fig. 5, 6

Shell ear-shaped, translucent, white, with pink apex; spiral threads on the upper part, sharp, distant keels on the lower portion, all crossed by faint accretional striae; spire elevated, adult whorls three, early whorls rounded, last oval, flattened above; mouth large, oval, oblique; slit deep, well above the periphery; columella concave, broad, with a moderate lobe over the narrow umbilicus. Height 1.2 mm., diameter 1.35 mm.

*Loc.*—South Australia: Gulf St. Vincent; Glenelg, shell sand (type loc.); Guichen Bay; Minlacowie. Victoria: Port Fairy. Western Australia: Albany.

*Remarks*—This species differs from *remota* Iredale 1924, New South Wales, in its greater size and higher spire. A synonym is *Scissurella obliqua* Pritchard and Gatliff 1903, not Watson 1886. *S. rosea* Hedley 1904, from New Zealand, is distinct. The present species is figured by the writer, as *S. remota*, in the S. Aust. Nat., 1933, 15, pl. i, fig. 9. Holotype, Reg. No. D. 14109, S. Aust. Museum.

SCHIZOTROCHUS GUNTERI Cotton and Godfrey

*Schizotrochus gunteri* Cotton and Godfrey 1933, S. Aust. Nat., 15, 23., pl. i, fig. 11.

*Loc.*—South Australia: Beachport, 150 fms. (type loc.), 200 fms.; Cape Jaffa, 100, 130 and 300 fms.; Cape Wiles, 100 fms.

*Remarks*—Less strongly sculptured than the *australis* Hedley 1903 from New South Wales but not South Australia, although attaining to almost the same size.

Family FISSURELLIDAE

HEMITOMA SUBEMARGINATA (Blainville)

*Emarginula subemarginata* Blainville 1819, Dict. Sci. Nat., 14, 382.

*Loc.*—South Australia: MacDonnell Bay (type loc.); Guichen Bay; Streaky Bay; Kangaroo Island; Rapid Head, 9 to 12 fms.; Eastern Cove, 9 fms.; Hardwicke Bay, 9 fms.; Investigator Straits, 8, 15 and 17 fms.; Edithburgh, 5 fms.; Point Marsden, 13 and 17 fms.; Backstairs Passage, 8, 13, 16, 17, 18, 19, 20 and 22 fms.; Yankalilla Bay, 10, 12 and 20 fms.; Thistle Island, 12 fms.; Gulf St. Vincent, 9 fms.; Porpoise Head, 17 fms.; American River, 8 fms.; Black Point, 14 fms.; Western Cove, 10 fms.; Wallaroo, 15 fms.; St. Francis Island,

15, 20 and 35 fms. Western Australia: Hopetoun; Ellenbrook; Bunbury, 22 fms.; eight miles west of Eucla, 81 fms.; Esperance; Rottnest; Albany; King George Sound.

*Remarks*—Alive from 5 to 20 fms. and common on rocks just below low tide. The young has a distinct slit fasciole pitted by successive slit margins and slightly curved to the right of the middle line, giving an asymmetrical appearance. The radula has an average-sized central tooth, fairly wide, not serrated laterals, overlapping; a distinct line running across the central and laterals about midway in their length; major lateral bicuspid; marginals numerous and serrated.

#### FORALEPAS BAKEIEI (Sowerby)

*Macroschisma bakeiei* Sowerby 1886, *Thes. Conch.*, 3, 206, pl. ccxlv, fig. 221.

*Loc.*—Western Australia: Albany (type loc. here designated); Hopetoun; Rottnest; Yallingup; Ellenbrook; Bunbury; Geraldton.

*Remarks*—The shell is smaller, thicker, wider and decidedly more coarsely sculptured than *Foralepas tasmaniae* from the eastern end of the Flindersian Region. The animal is very large in proportion to the shell and gleaming white. The shell is situated well to the front covering the vital organs, while the posterior portion of the animal is uncovered. The species is usually attached to the undersurface of smooth rocks deeply buried in clean sand. This situation serves as a protection for such a vulnerable animal.

#### DOLICHOSCHISMA PRODUCTA (Adams)

*Macroschisma producta* Adams 1850, *Proc. Zool. Soc.*, 202.

*Loc.*—South Australia: Port Lincoln (type loc.); Normanville; American River; Beards Bay; Black Point; Hardwicke Bay; Edithburgh; Pondolowie Bay; Yankalilla Bay, 12 to 15 fms.; Backstairs Passage, 20 fms.; Investigator Straits, 15 fms.; St. Francis Island, 15 to 20 fms.

#### DOLICHOSCHISMA MUNITA (Iredale)

*Dolichoschisma producta munita* Iredale 1940, *Aust. Zool.*, 9, (4), 431.

*Loc.*—Western Australia: Geraldton (type loc.); King George Sound; Albany; Rottnest; Hopetoun; Bunbury, alive in shallow water, dead on the beach.

*Remarks*—Records of "*Dolichoschisma producta* Adams" from Western Australia are really this species, which is smaller and has well-developed foramen and sinus features and finer sculpture.

#### Family TROCHIDAE

##### MICROCLANCULUS GATLIFFI (Tomlin.)

*Clanculus gatliffi* Tomlin. 1924, *Proc. Mal. Soc.*, 16, 24, text fig.

*Loc.*—Western Australia: Fremantle (type loc.); Bunbury.

*Remarks*—An examination of cotypes from Gatliff suggests that this is at most a subspecies of *euchelioides* Tate 1893, being the Western Australian form.

##### MINOLOPS CORALLINA (Cotton and Godfrey)

*Gibbula corallina* Cotton and Godfrey 1935, *S. Aust. Nat.*, 16, 35, text fig.

*Loc.*—South Australia: Gulf St. Vincent (type loc). Western Australia: Rottnest; Yallingup; King George Sound; Ellenbrook; Bunbury.

*Remarks*—The species must be rare in South Australia, as only the type specimens taken by Dr. Basedow are known from there.

## Family STOMATIIDAE

## STOMATIA AUSTRALIS Adams

*Stomatia australis* Adams 1850, Proc. Zool. Soc., 34.

*Loc.*—Northern Australia (type loc.). Western Australia: North West; Geraldton; Rottnest Island.

*Remarks*—Probably closely related to the genotype *phymotis* Helbing 1779. It has not yet been taken in western South Australia.

## GENA AURICULA (Lamarck)

*Stomatella auricula* Lamarck 1816, Tabl. Encyc. Meth., Liste, 10, pl cccl, fig. a–b.

*Loc.*—Western Australia: King George Sound (type loc.). South Australia: general on reefs amongst weeds below low tide; abundant dredged alive on seaweeds, stones and ascidians in 5 fms. and down to 9 fms. Victoria. Tasmania.

*Remarks*—Moves quickly along the surface of rocks. Coarser and larger than the Peronian *Gena impertusa* Burrows = *strigosa* Adams and the Queensland *nigra* Quoy and Gaimard.

## Family STOMATELLIDAE

## VACEUCHELUS AMPULLUS (Tate)

*Euchelus ampullus* Tate 1893, Trans. Roy. Soc. S. Aust., 197, pl. i, fig. 5.

*Loc.*—Western Australia: Cambridge Gulf; North Western Australia (type loc.); Rottnest; Yallingup; Albany; Ellenbrook; Geraldton; King George Sound; beach and alive down to 22 fms. South Australia: West Coast; Beachport; St. Francis Island, 35 fms. Tasmania: North Coast. Queensland: Caloundra.

*Remarks*—Holotype, Reg. No. D. 14182. The holotype and cotypes have the locality "W.A." It is common in southern Western Australia; much rarer in South Australia.

## VACEUCHELUS PROFUNDIOR (May)

*Euchelus profundior* May 1915, Proc. Roy. Soc. Tas., 98, pl. vii, fig. 39.

*Loc.*—South Australia: Beachport, 150 and 200 fms. Western Australia: 80 miles west of Eucla, 81 fms.; 40 miles west of Eucla, 72 fms.

*Remarks*—This is probably a deep water subspecies of *ampullus* Tate 1893, and some specimens intergrade with examples of Tate's species from 20 to 50 fms.

## HERPETOPOMA PUMILIO (Tate)

*Euchelus pumilio* Tate 1893, Trans. Roy. Soc. S. Aust., 17, 196, pl. i, fig. 3.

*Loc.*—South Australia: Fowler Bay (type loc.); Streaky Bay; Minlacowie; Robe. Western Australia: Rottnest; Bunbury; Yallingup; King George Sound.

*Remarks*—More depressed than *fenestratus*, five lirae on the body whorl, stouter and more distant and more vertical axial riblets, feebler nodosities at the intersections. Holotype, Reg. No. D. 13393, S. Aust. Museum.

## HERPETOPOMA SCABRIUSCULUS (Adams and Angas)

*Euchelus scabriusculus* Adams and Angas 1867, Proc. Zool. Soc., 215.

*Loc.*—New South Wales: Port Jackson (type loc.). Victoria: Port Fairy. South Australia: Beachport, 40, 100, 110 and 200 fms.; Backstairs Passage, 20 fms.; Cape Jaffa, 90 and 130 fms.; St. Francis Island, 15 to 20 fms.; Gulf St. Vincent, 10 fms.; Cape Borda, 55 fms.; Ardrossan, 6 to 8 fms.; alive on reefs

just below low tide and down to 10 fms.; also dead on beach Wallaroo, Venus Bay, Edithburgh, Murat Bay, Gulf St. Vincent and Spencer Gulf. Tasmania: Rocky Shores, down to 10 fms.

*Remarks*—Distinguished from *vixumbilicatus* by the narrow reddish to brown shell and closer, finer sculpture with obsoletely latticed narrower interstices. A synonym is *Euchelus tasmanicus* Tenison Woods 1876, from Tasmania.

#### HERPETOPOMA VIXUMBILICATUS (Tate)

*Euchelus vixumbilicatus* Tate 1893, Trans. Roy. Soc. S. Aust., 17, 196, pl. i, fig. 4.

*Loc.*—South Australia: West Coast of South Australia (type loc.); Streaky Bay; Venus Bay; Point Sinclair; St. Francis Island; Guichen Bay; Robe; Cape Borda, 55 fms.; Gulf St. Vincent; Marino, 5 fms. Western Australia; Ellenbrook; Hopetoun; Yallingup; Rottnest; King George Sound, beach and 28 fms.; Bunbury, 15 fms.; 90 miles west of Eucla 100 fms., 20 miles west 300 fms.; Shark Bay; alive in shallow water and dead from 60 to 100 fms.

*Remarks*—The white colour, pink spotting, broader shell, well developed latticed sculpture distinguish this shell from *scabriusculus* Adams and Angas from New South Wales and extending into South Australia. Holotype, Reg. No. D. 13394, S. Aust. Museum.

#### HERPETOPOMA FENESTRATA (Tate)

*Euchelus fenestratus* Tate 1893, Trans. Roy. Soc. S. Aust., 17, 195, pl. i, fig. 2.

*Loc.*—Western Australia (type loc.): Rottnest; King George Sound; Bunbury, 15 fms. South Australia: Gulf St. Vincent; Normanville; West Coast; St. Francis Island, dredged; Beachport, 40 and 150 fms.; Cape Borda, 55 fms.; Neptunes, 45 fms.; St. Francis Island, 15 to 20 fms., alive on reefs in shallow water and down to 20 fms., dead from 55 to 150 fms.

*Remarks*—Distinguished by the clathrate sculpture, elevated spire, biangulated whorls, imperforate base. Holotype, Reg. No. D. 13396.

#### HERPETOPOMA ANNECTANS (Tate)

*Euchelus annectans* Tate 1893, Trans. Roy. Soc. S. Aust., 17, 196.

*Loc.*—Western Australia (type loc.): Albany; Ellenbrook. South Australia: Reevesby Island.

*Remarks*—Distinguished from *vixumbilicatus*, though generally similar in shape, in being imperforate, and consequently having no umbilical beaded cingulus; from *pumilio* it differs in having five instead of two spiral lirae on the penultimate whorl. The species is close in general appearance to *vixumbilicatus*. Holotype, Reg. No. D. 13395.

#### HERPETOPOMA ASPERSUS (Philippi)

*Trochus aspersus* Philippi 1844, Zeitschr. für Malakoz., 103.

*Loc.*—Western Australia (type loc. *baccatus* Menke 1843, and possibly of *aspersus* Philippi): Bunbury; Yallingup, Rottnest; Albany; Geraldton. South Australia: Gulf St. Vincent; St. Francis Island; Spencer Gulf; Cape Borda, 55 fms.; Tunk Head, 16 fms.; Beachport, 40 and 150 fms.; Guichen Bay; Port MacDonnell; Wallaroo, beach and 15 fms.; Port Elliston.

*Remarks*—*Monodonta baccatus* Menke 1843, not DeFrance 1824, is a synonym. Philippi 1846 gives as original reference "*Trochus aspersus* Koch 1846, Zeitsch. für Malakoz., 103." A variant represented by one or two specimens from South Australia has the granules radially elongate giving the shell quite a different appearance under 10 diams. magnification.

## Family LIOTIIDAE

## MUNDITIA TASMANICA (Tenison Woods)

*Liotia tasmanica* Tenison Woods 1875, Proc. Roy. Soc. Tas., 153.

*Loc.*—Tasmania: Long Bay (type loc.). South Australia: Yankalilla Bay, 9. to 20 fms.; Rapid Head, 10 to 12 fms.; Gulf St. Vincent, 7 fms.; Spencer Gulf, 13 fms.; Backstairs Passage, 22 fms.; Investigator Straits, 15 fms.; Port Lincoln, 9 fms.; Newland Head, 20 fms.; Point Marsden, 15 fms.; Beachport, 40 to 150 fms.; Wallaroo, 15 fms.; Ardrossan, 6 fms., alive down to 40 fms., many at 22 fms. New South Wales. Victoria.

*Remarks.*—Synonyms are *incerta* Tenison Woods, immature, and *tasmanica* var. *scalaris* Hedley 1903, New South Wales. *Delphinula sydereia* Reeve 1843 from the Philippines was a name incorrectly used for the South Australian shell. The distinguishing feature of this species is the nodular projecting tubercles on the periphery whorls. There is a certain amount of variation in South Australian specimens. Adults may vary in maximum diameter from 3.5 mm. to 8 mm. The axials may number from 12 to 16 and sometimes are distinct from the suture outwards, or scarcely visible on the dorsum but standing out at the angle as large, sharp, triangular tubercles. Similarly, the spirals which may be prominent and stout on the dorsum form a marked tuberculation with axials, or in others may be just visible. In some there may be a peripheral carina almost as large as the upper one which forms the dorsal angle, with a fairly well marked one in between, while in others all but the dorsal one may be obsolete. The carina forming the basal angulation is generally well marked, but even this may be obsolete. The axials in some become much reduced towards the aperture. The degree of descent of the last whorl towards the aperture varies, as does also the elevation of the spire, which in most is quite flat, but rarely slightly raised. The axial lirae vary much in their distinctness. The radula of a South Australian specimen has the formula  $\alpha + 5 + 1 + 5 + \alpha$ , a central denticle, five laterals and an indefinite number of about 75 marginals. It is very like the figure of "*Leptothyra carpenteri*" given by Pilsbry, in Tryon's Manual Conch., 10, pl. 60, fig. 73. The median tooth is provided with a narrow elevated part above, and this is hooked over to form a median, slightly serrated cusp; below this there is a ledge, which is not a projecting thickening but is due to the recession of the parts below it. The lateral margins are expanded into projecting wings, and these rest upon corresponding projections from the adjacent laterals. Extending above the cusp, and lying behind it is an accessory plate. The laterals are long and very oddly shaped. There is an obliquely-placed serrated cusp at the top; then a plate at the upper part projecting outwards on which lies the inner upper part of the next outer marginal. Below this is another thicker and somewhat twisted plate which, like the expanded wings of the central tooth, rests in front of a plate projecting from the inside of the next lateral. The lower end is somewhat pointed. The outermost lateral is slightly different from the others in that it wants the two expansions from its outer side. The central tooth stands a little lower than its adjacent laterals, the innermost three of these rise successively higher, the fourth is lower and the fifth lower still. The first 10 or 12 marginals are hooked, the hooks being smooth, but there is a notch in the stem immediately beneath the hook. These are all joined by another and finer piece to a horizontal rod, about as long as the stem of the marginal. The next marginals are serrated on both edges of the hook, and notched underneath, and on each successive marginal has the hook shorter, until it is finally reduced to a mere bending forward or thickening of the top of the stem with serrated edges, and the knobs gradually lessen in size; finally they appear to be reduced to acicular uncini with thin, curved ends, two of which needles may be articulated to a divided lower limb.

## MUNDITIA HEDLEYI (Pritchard and Gatliff)

*Liotia hedleyi* Pritchard and Gatliff 1899, Proc. Roy. Soc. Vict., 12, 105, pl. viii, fig. 8, 9, 10.

*Loc.*—Victoria: Flinders Beach; Western Port (type loc.). South Australia: Gulf St. Vincent, 17 fms.; Backstairs Passage, 17 fms.; Beachport, 100, 110, and 150 fms.; Cape Jaffa, 130 fms., alive down to 17 fms.

*Remarks*—Distinguished by the strong, spaced axials crossing and serrating the spirals and extending from suture to umbilicus. Somewhat resembling the tropical Philippine *Liotina discoidea* Reeve which occurs in Northern Australia but which does not have the axials continued on to the base.

## MUNDITIA AUSTRALIS (Kiener)

*Delphinula australis* Kiener 1839, Coq. Viv., 10, 8, pl. iv, fig. 7.

*Loc.*—South Australia: Islands of St. Peter and St. Francis (type loc.); Yankalilla Bay, 15 fms.; Rapid Head, 10 and 12 fms.; Investigator Straits, 15 fms.; Gulf St. Vincent, 10 and 20 fms.; Backstairs Passage, 17, 19, 20 and 22 fms.; Newland Head, 20 and 24 fms.; Porpoise Head, 17 fms.; Middleton, 10 fms.; Beachport, 40 and 110 fms.; Tunk Head, 16 fms., alive down to 40 fms. Tasmania: North Coast. Victoria: Western Port; Port Fairy. Western Australia: Bunbury; Fremantle; King George Sound; Esperance; Hopetoun, 25 fms.

*Remarks*—South Australian specimens vary greatly in adult size when the aperture has formed a varix. They range from 5 mm. in diameter in a micro-morph to 14 mm. in macromorph. The "beaded riblet winding into the umbilicus" is composed of four or five axial lirae which bend towards one another and unite to form a small furrowed flame-like pyramid ending in a fine point. The varix of the mouth is in two parts, the second portion being of less diameter than the first; both have rounded tubercles on their margin formed by expansions of the spiral ribs. These tubercles touch one another between the two parts. Specimens examined in which the animal has been devoured have the shell bored in and about the base, the hole being in or near the umbilicus, only one has a dorsal hole. The operculum has a granular external surface and is very close fitting, so as to remain *in situ* when the mollusc has been devoured.

## MUNDITIA DENSILINEATA (Tate)

*Liotia densilineata* Tate 1899, Trans. Roy. Soc. S. Aust., 23, 228.

*Loc.*—Tasmania: D'Entrecasteaux Channel (type loc.); Pilot Station, 10 fms. South Australia: Beachport, 40, 110, 150 and 200 fms.; Cape Borda, 55 fms., alive down to 10 fms.

*Remarks*—It is suggested by Tate that the holotype description may be based on an immature specimen, and indeed the shell does recall an immature *Munditia australis*, though probably quite distinct from that species. In *Munditia subquadrata* the spiral sculpture consists also of fine threadlets, but its revolving ridges are few and bold, imparting a quadrate outline to the last whorl. Holotype, Reg. No. D.13413.

## MUNDITIA MAYANA (Tate)

*Liotia mayana* Tate 1899, Trans. Roy. Soc. S. Aust., 23, 227, pl. vi, fig. 5, a, b, c.

*Loc.*—Tasmania (type loc.), dredged 50 to 100 fms. Victoria: Western Port. South Australia: Spencer Gulf, 20 fms.; Backstairs Passage, 16, 17, 18, 19, 20 and 22 fms.; Investigator Straits, 13 and 15 fms.; Port Lincoln, 9 fms.; Point Marsden, 15 fms.; Porpoise Head, 17 fms.; Beachport, 110 and

150 fms.; Newland Head, 20 and 24 fms.; Tunk Head, 16 fms.; Wallaroo, 15 fms.; Cape Jaffa, 130 fms., alive down to 40 fms.

*Remarks*—Resembles in size and general appearance *Munditia subquadrata*, but the suture is not excavated, the aperture not so explanulately thickened and the columella margin is detached from the umbilical rim. Holotype, Reg. No. D.13413, S.A. Museum.

#### MUNDITIA SUBQUADRATA (Tenison Woods)

*Liotia subquadrata* Tenison Woods 1878, Proc. Linn. Soc. N.S.W., 2, 236.

*Loc.*—Tasmania: Long Bay (type loc.); Blackman's Bay, all round the coast in shallow water. Victoria: Western Port. South Australia: Gulf St. Vincent, 5 fms.; Porpoise Head, 17 fms.; Middleton, 10 fms.; Backstairs Passage, 22 fms.; Beachport, 40, 110 and 150 fms.; Cape Jaffa, 130 fms., alive down to 10 fms. Western Australia: Hopetoun, 25 fms.

*Remarks*—The holotype is a juvenile of 3 mm. diameter. South Australian specimens range between 5 mm. to 6.5 mm. in diameter; Tasmanian attain to 9 mm. South Australian specimens may have the axials continued to the apertural varix or the last third of the whorl may be free from them.

#### CHARISMA ARENACEA (Pritchard and Gatliff)

*Leptothyra arenacea* Pritchard and Gatliff 1901, Proc. Roy. Soc. Vict., 14, 181, pl. ix, fig. 3.

*Loc.*—Victoria: Rhyll; Phillip Island; Western Port, 5 to 6 fms. (type loc.). Tasmania: Thouin Bay, 40 fms. South Australia: Backstairs Passage, 17 fms.

*Remarks*—The species is distinguished by the well-defined spiral ridges.

#### CHARISMA JOSEPHI (Tenison Woods)

*Cyclostrema josephi* 1877, Proc. Roy. Soc. Tas., 147.

*Loc.*—Tasmania: Blackman's Bay (type loc.), 10 to 100 fms., common in deep water. Victoria: Western Port. South Australia: Backstairs Passage, 20 and 22 fms.; Cape Borda, 62 fms., living at around 20 fms. Western Australia: Ellenbrook; Yallingup.

*Remarks*—A stout, somewhat globular shell, with the first two or three whorls smooth, the rest spirally engraved, umbilicus well marked, with a rounded axially finely striated pad; mouth round, entire, bevelled inside, flat margined. The operculum is multispiral and apparently thinly calcareous exteriorly.

#### CHARISMA CARINATA (Verco)

*Leptothyra carinata* Verco 1907, Trans. Roy. Soc. S. Aust., 31, pl. xxix, fig. 8.

*Loc.*—South Australia: Backstairs Passage, 20 fms. (type loc.); Newland Head, 20 fms., dead; St. Francis Island, 6 fms., alive.

*Remarks*—Distinguished from *arenacea* by the more marked carinae, more widely canaliculated suture and wider umbilicus of the present species. Holotype, Reg. No. D.14199.

#### ARGALISTA FUGITIVA Hedley 1911

*Leptothyra fugitiva* Hedley 1911, Zool. Res. Endeavour, 1, 104, pl. xviii, fig. 18, 19, 20.

*Loc.*—South Australia: Cape Wiles, 100 fms. (type loc.); Beachport, 110 fms.

*Remarks*—Smaller, flatter, more finely grooved than any other Australian species, such as *rotatum* Hedley 1899, from Tutaga Islet, Funafuti, 200 fms., *roseopunctata* Angas 1880, from South Australia, and *rosea* Tenison Woods 1876, from Tasmania.

AGALISTA ROSEOPUNCTATA (Angas)

*Collonia roseopunctata* Angas 1880, Proc. Zool. Soc., 417, pl. xl, fig. 8.

*Loc.*—South Australia: Holdfast Bay, in shell sand (type loc.); MacDonnell Bay; Cape Borda, 62 fms.

*Remarks*—The dotted rose colouring and solid shell distinguish this species.

STARKEYNA CANCELLATA (Tate)

*Ethalia* (?) *cancellata* Tate 1878, Trans. Roy. Soc. S. Aust., 2, 139, pl. v, fig. 11a, 11c.

*Loc.*—South Australia: Holdfast Bay; Gulf St. Vincent (type loc.); Streaky Bay; Fowlers Bay; Great Australian Bight; St. Francis Island, 6 and 35 fms.; Beachport, 40 fms. Western Australia: Rottnest.

*Remarks*—Holotype, Reg. No. D.14110, S. Aust. Museum.

CALLOMPHALA LUCIDA Adams and Angas 1864

*Callomphala lucida* Adams and Angas 1864, Proc. Zool. Soc., 35.

*Loc.*—New South Wales: Coogee Bay, in shell sand (type loc.). South Australia: Robe; St. Francis Island, shell sand; Beachport, 40 and 110 fms.; Cape Borda, 55 and 62 fms., alive in shallow waters down to 5 fms., dead from 10 to 110 fms. Victoria: Western Port. Tasmania: ?.

*Remarks*—Rare in South Australia, only one or two specimens from each of the above localities.

CIRSONELLA WELDII (Tenison Woods)

*Cyclostrema weldii* Tenison Woods 1876, Proc. Roy. Soc. Tas., 147.

*Loc.*—Tasmania: Long Bay, 20 fms. (type loc.), shallow water to 100 fms., common; North Coast (type loc. *susonis*). New South Wales: Botany Bay (type loc. *australis*). South Australia: MacDonnell Bay; Robe; Sceales Bay; Arno Bay, dredged; Gulf St. Vincent, 10 fms.; Cape Borda, 62 and 90 fms.; Cape Jaffa, 49 and 300 fms.; Beachport, 40, 110 and 150 fms.; Investigator Straits, 20 fms., alive down to 90 fms. and shells in good condition, probably living specimens down to 150 fms., dead shells in deeper water.

*Remarks*—Not common in South Australia. Synonyms are *australis* Angas 1877 and *susonis* Tenison Woods 1877.

CIRSONELLA TRANSLUCIDA May

*Cirsonella translucida* May 1915, Trans. Roy. Soc. Tas., 97, pl. vii, fig. 39.

*Loc.*—Tasmania: Thouin Bay, 40 fms. (type loc.). South Australia: Beachport, 40 fms.; Cape Borda, 55 fms.; Venus Bay. Western Australia: King George Sound.

*Remarks*—Varies much in size, average smaller in South Australia.

LISSOTESTA MICRA (Tenison Woods)

*Cyclostrema micra* Tenison Woods 1876, Proc. Roy. Soc. Tas., 147.

*Loc.*—Tasmania: Long Bay (type loc.), 10 to 100 fms. Victoria: Western Port. South Australia: Backstairs Passage, 20 fms.; Cape Borda, 55 fms.; Beachport, 40 fms.; Cape Jaffa, 49 fms.

*Remarks*—Rare in South Australia.

## LISSOTESTA CONTABULATA (Tate)

*Cyclostrema contabulata* Tate 1899, Trans. Roy. Soc. S. Aust., 23, 222, pl. vii, fig. 6.

*Loc.*—South Australia: Streaky Bay (type loc.); Fowlers Bay; Smoky Bay; Murat Bay; Gulf St. Vincent; Robe, in shell sand in great numbers; Beachport, 40 fms., dredged alive in numbers in weeds, St. Francis Island, 6 and 35 fms. Tasmania: Frederick Henry Bay; rare. Western Australia: King George Sound, beach and down to 24 fms.

*Remarks*—Holotype, Reg. No. D.13405, S. Aust. Museum.

## LISSOTESTA PORCELLANA (Tate and May)

*Cyclostrema porcellana* Tate and May 1900, Trans. Roy. Soc. S. Aust., 24, 101.

*Loc.*—Tasmania: Frederick Henry Bay (type loc.). South Australia: Cape Borda, 55 fms., one specimen only. Victoria: Port Fairy.

*Remarks*—More conic than *contabulata* and *micra*. A synonym is *Rissoa translucida* May 1912.

## EUDARONIA gen. nov.

Genotype: *Cyclostrema* (*Daronia*) *jaffaensis* Verco 1909—South Australia.

Shell small, planorbid of two whorls, with a carinating cord above and below, suture impressed, aperture reniform, peristome simple, thin, not continuous, spread as a thin glaze over the preceding whorl; umbilicus very wide and perspective; spire sunken.

*Distribution*—Southern Australia and Tasmania.

*Remarks*—The genus differs from *Daronia*, genotype *Daronia spirula* Adams 1861 from the Philippines, in the discontinuous peristome, which must be regarded as an important generic feature.

## EUDARONIA JAFFAENSIS (Verco)

*Cyclostrema* (*Daronia*) *jaffaensis* Verco 1909, Trans. Roy. Soc. S. Aust., 23, 270, pl. xx, fig. 6, 7.

*Loc.*—Cape Jaffa, 90 fms. (type loc.) 49 fms. Tasmania: Schouten Island, 80 fms.; Cape Raoul, 50 fms.

*Remarks*—Holotype, Reg. No. D13411, S. Aust. Museum.

## LODDERIA LODDERAE (Petterd)

*Liotia lodderae* Petterd 1884, Journ. Conch., Lond., 135.

*Loc.*—Tasmania: Leven Heads (type loc.); North Coast, in shallow water. South Australia: Fowler Bay; American River; Kangaroo Island; Denial Bay; Streaky Bay; St. Francis Island, alive in shallow water just below low tide. Victoria: Western Port. New South Wales: Middle Harbour.

## LODDERENA MINIMA (Tenison Woods)

*Liotia minima* Tenison Woods 1878, Trans. Roy. Soc. Vict., 14, 58.

*Loc.*—Victoria: Western Port (type loc.). South Australia: Robe, in shell sand. New South Wales: Port Jackson.

## CROSSEOLA CONCINNA (Angas)

*Crossea concinna* Angas 1867, Proc. Zool. Soc., 911, pl. xlv, fig. 14.

*Loc.*—New South Wales: Port Jackson (type loc.). Victoria: Western Port. Tasmania: North Coast. South Australia: rare, Gulf St. Vincent, 17 fms.; Newland Head, 20 fms.; Yankalilla and Robe, shell sand.

*Remarks*—Distinguished by the fine sculpture.

## CROSSEOLA CARINATA (Hedley)

*Crossea carinata* Hedley 1903, Mem. Aust. Mus., 4, 345, fig. 71.

*Loc.*—New South Wales: Port Kembla, 63-75 fms. (type loc.), 16 miles east of Wollongong, 100 fms. Tasmania: 40 to 100 fms., common. South Australia: Beachport, 110 fms.

*Remarks*—Distinguished by the globular shell, bluntly keeled at the periphery.

## CROSSEOLA CANCELLATA (Tenison Woods)

*Crossea cancellata* Tenison Woods 1878, Proc. Roy. Soc. Tas., 122.

*Loc.*—Tasmania: Blackman's Bay (type loc.); Channel, 10 fms. South Australia: Gulf St. Vincent, 5 fms.; Newland Head, 20 fms.; Beachport, 40 and 150 fms.; Cape Borda, 55 fms., living down to 150 fms.

*Remarks*—Minute, cancellate.

## CROSSEOLA CONSOBRINA (May)

*Crossea consobrina* May 1915, Proc. Roy. Soc. Tas., 97, pl. xxiii, fig. 1.

*Loc.*—Tasmania: Thouin Bay, 40 fms. South Australia, Beachport, 40 fms.

*Remarks*—Distinguished from *cancellata* by the square cut, non-channelled front of the columella, smaller umbilicus and less strongly cancellate sculpture.

## DOLICROSSEA LABIATA (Tenison Woods)

*Crossea labiata* Tenison Woods 1875, Proc. Roy. Soc. Tas., 151.

*Loc.*—Tasmania: Long Bay, 10 fms. (type loc.), 10 to 40 fms. South Australia: Beachport, 40 and 150 fms.; Cape Jaffa, 130 fms.; Investigator Straits, 20 fms.; Ardrossan, 14 fms.; Backstairs Passage, 18 fms.; Gulf St. Vincent, 5 and 9 fms.; Scales Bay; Venus Bay; Holdfast and Aldinga Bays; Grange and Outer Harbour, shell sand.

*Remarks*—Distinguished by the narrow canaliculation of inner lip and the thickened and reflected outer lip. Related fossils are *Dolicrossea labiata sub-labiata* Tate and *lauta* Tate.

## BROOKULA ANGELI (Tenison Woods)

*Rissoa angeli* Tenison Woods 1876, Proc. Roy. Soc. Tas., 153.

*Loc.*—Tasmania: Long Bay (type loc.); Blackman's Bay. South Australia: shell sand, Robe; and dredged Cape Borda, 62 fms.

*Remarks*—Distinguished by the ill-defined axial ribs, about as wide as the interspaces, becoming obsolete at the periphery and base, and numbering about 15 on the body whorl. Variable in shape. Variants are:

- (a) The typical form has few stout axial ribs, about ten, ceasing at the periphery.
- (b) The axial ribs may be almost obsolete but axial incision may be present on the earlier whorls, and also suggestion of ribbing on the body whorl, making the spirals faintly polygonal.

## BROOKULA CREBRESULPTA (Tate)

*Cyclostrema crebresculpta* Tate 1899, Trans. Roy. Soc. S. Aust., 23, 219, pl. vii, fig. 5.

*Loc.*—Tasmania: (type loc.), Channel, 10 fms. South Australia: Backstairs Passage, 10 fms.; Robe, shell sand.

*Remarks*—Besides the sculpture of crowded axial threads and interstitial spiral striae, there is also a microscopic sculpture of incremental striae.

## BROOKULA NEPEANENSIS (Gatliff)

*Scala nepeanensis* Gatliff 1906, Proc. Roy. Soc. Vict., 1, pl. i, fig. 5.

*Loc.*—Victoria: in shell sand, Ocean Beach; Point Nepean (type loc.). Tasmania: Storm Bay; Thouin Bay, 40 fms. South Australia: Cape Borda, 62 fms.; Backstairs Passage, 10 fms.

*Remarks*—Distinguished from *angeli* by the more definite axial ribs.

## BROOKULA JOHNSTONI (Beddome)

*Cyclostrema johnstoni* Beddome 1882, Proc. Roy. Soc. Tas., 168.

*Loc.*—Tasmania: off Old Station, Brown's River Road, 7 fms. (type loc.). South Australia: Robe, in shell sand.

## ZALIPAIS INSCRIPTA (Tate)

*Cyclostrema inscriptum* Tate 1899, Trans. Roy. Soc. S. Aust., 13, 216, pl. vii, fig. 3.

*Loc.*—South Australia: West Coast (type loc.); Glenelg, shell sand; Cape Jaffa, 49 fms.; Beachport, 40 fms.; Cape Borda, 62 fms.; dredged alive down to 49 fms., dead to 62 fms.

*Remarks*—Distinguished by the flattened spire.

## ZALIPAIS BRUNIENSE (Beddome)

*Cyclostrema bruniensis* Beddome 1883, Proc. Roy. Soc. Tas., 168.

*Loc.*—Tasmania: Cloudy Bay; Lagoon; South Bruny Island (type loc.). South Australia: Port MacDonnell. Victoria: Portsea.

*Remarks*—A minute brown, flattened shell.

## ELACHORBIS TATEI (Angas)

*Cyclostrema tatei* Angas 1878, Proc. Zool. Soc. Lond., 862, pl. liv, fig. 10.

*Loc.*—South Australia: Holdfast Bay, shell sand (type loc.); Largs Bay; Tourville Bay; St. Francis Island, beach; Point Sinclair, 15 to 20 fms.; Beachport, 40, 110 and 150 fms.; Cape Jaffa, 130 fms.; Cape Borda, 62 fms., alive in shallow water down to 5 fms. Western Australia: Bunbury; King George Sound.

*Remarks*—Two spiral keels, varying in strength, sometimes almost obsolete. Shell varying in thickness.

## ELACHORBIS HARRIETTAE (Petterd)

*Cyclostrema harriettae* Petterd 1884, Journ. Conch., 215.

*Loc.*—Tasmania: North-west Coast (type loc.). South Australia: Robe; Holdfast Bay, shell sand; Newland Head, 28 fms.; Cape Borda, 62 fms., dead below 50 fms. Victoria: Port Fairy.

*Remarks*—A pure white species very closely allied to *tatei* but quite distinct, and has a more open umbilicus than *Elachorbis homalon* Verco 1907.

## ELACHORBIS HOMALON (Verco)

*Cyclostrema homalon* Verco 1907, Trans. Roy. Soc. S. Aust., 31, 305, pl. xxix, fig. 3, 4.

*Loc.*—South Australia: Cape Borda, 62 fms. (type loc.); Cape Jaffa, 130 fms.; Beachport, 110 fms.

*Remarks*—Holotype, Reg. No. D.13410. Related to *harriettae* but has a less open umbilicus, labrum not sinuous on the dorsum but having a continuous convex curve; the infra-umbilical spirals are much finer and more crowded.

## ELACHORBIS CAPERATA (Tate)

*Cyclostrema caperatum* Tate 1899, Trans. Roy. Soc. S. Aust., 23, 216 pl. vii, fig. 1a-1b.

*Loc.*—Victoria: Lakes Entrance; Gippsland, in shell sand (type loc.). South Australia: Robe.

*Remarks*—Holotype, Reg. No. D.13407, S. Aust. Museum.

## ELACHORBIS DELECTABILE (Tate)

*Cyclostrema delectabile* Tate 1899, Trans. Roy. Soc. S. Aust., 23, 216.

*Loc.*—South Australia: Fowlers Bay, West Coast (type loc.); Backstairs Passage, 22 fms.

*Remarks*—Distinguished by the rather strong spiral sculpture meshed by axial threadlets. Holotype, Reg. No. D.13409, S. Aust. Museum.

## Family TURBINIDAE

## SUBNINELLA UNDULATUS (Solander)

*Turbo undulatus* Solander 1786, Portland Catalogue.

*Loc.*—Tasmania (type loc.). South Australia: Rapid Head, 9 and 11 fms., alive at low tide mark, common on reefs; both Gulfs; Ocean Beaches; Kangaroo Island; Pondolowie Bay; Point Sinclair; Venus Bay; St. Francis Island; Reevesby Island; Robe. Victoria. New South Wales. Western Australia: Albany; Yallingup; Esperance.

*Remarks*—South-Eastern specimens from Robe and vicinity are strongly ribbed above with supra, infrasutural and peripheral carinae conforming closely to the typical Tasmanian specimens. The species is plentiful and is locally called Common Warrener, being edible and suitable for bait. It is common on native kitchen middens at Cape Banks and vicinity generally.

## NINELLA TORQUATUS (Gmelin)

*Turbo torquatus* Gmelin 1784, Syst. Nat., 3,597, No. 106.

*Loc.*—New South Wales: Port Jackson (type loc.). Queensland. Victoria. South Australia: both Gulfs; Corny Point; Kangaroo Island; Robe; Pondolowie Bay; Venus Bay; Point Sinclair; St. Francis Island, alive at low tide on reefs, dredged down to 5 fms. alive. Western Australia: Albany; Esperance; Yallingup; Bunbury; Rottnest; Ellenbrook; Cottesloe; Geraldton.

*Remarks*—Described originally as *Limax stamineus* Martyn 1784, not binomial. *Ninella torquatus lamellosus* Broderip is the Western Australian subspecies, type locality Garden Island, with higher whorls, markedly carinated at their centre with a stout cord, though there is variation and intergradation with *torquatus*.

## EUNINELLA GRUNERI (Philippi)

*Turbo gruneri* Philippi 1846, Conch. Cab., 52, pl. xii, fig. 7, 8.

*Loc.*—South Australia: Gulf St. Vincent (type loc.); Yankalilla Bay, 15 fms.; Rapid Head, 9 fms.; Investigator Straits, 8, 10 and 15 fms.; Point Marsden, 13½ fms.; Porpoise Head, 12 fms.; Backstairs Passage, 22 fms.; Cape Borda, 62 fms.; Tunk Head, 16 fms. Beachport, 40 fms.; both Gulfs; Robe; Point Sinclair, alive on reefs in shallow water and down to 15 fms. Western Australia: Bunbury; Yallingup, beach and dredged; Bunbury, 22 fms.; King George Sound, 12 to 14 fms.; Hopetoun, 35 fms.; 80 miles west of Eucla, 80 fms. Tasmania.

*Remarks*—When quite young the shell has a distinct rimate umbilicus, as in a specimen dredged from 8 fms. The species occurs as a Pleistocene fossil in raised beaches, and also in the Pliocene.

## BELLASTRAEA SQUAMIFERA (Koch)

*Astraliu squamiferu* Koch 1852, Conch. Cab., 2, *Trochus*, 215, pl. xxxii, fig. 4 (Kuster).

*Loc.*—Western Australia (type loc.): Albany; Geographe Bay; Rottnest. South Australia: common in both Gulfs in shallow water, under weed-covered stones and down to 30 fms. alive; Yankalilla, 15 fms.; Rapid Head, 9 and 12 fms.; Eastern Cove, 9 and 5 fms.; Investigator Straits, 8 to 10 fms. many alive, 13, 15 and 17 fms.; Corny Point, 30 fms.; American River, Kangaroo Island, 8 fms.; Coffins Bay, 5 fms.; Spilsby and Reevesby Islands, 5, 10, 12 and 13 fms.; Beachport, 40 fms., dead; Point Sinclair; Arno Bay, Streaky Bay. Tasmania: North and West Coast. Victoria: Western Port; Port Fairy.

*Remarks*—Young shells, of about half an inch in diameter, are umbilicated, but older, not so. The animal has a small foot compared with the base of the shell; sole white, upper surface of foot black, spotted irregularly with white; muzzle black, but its open and exerted end quite white and kept nearly in the same plane as the sole and in front of it; tentacles are about one-third the length of the foot, white with three rather wide longitudinal black lines and with crowded sublenticular transverse black lines; eyes are on the outside of the tentacles close to their base on white peduncles separate from the tentacle proper; there are no lateral cilia; the shelly operculum is carried on the back of the foot, not quite centrally but a little to the right and rather far forward. Variants are as follows:

- (a) The suprasutural margin markedly stellate, especially in the young, tending with age to become a corrugated lamella, but in some the stellate margin is retained even when quite large.
- (b) Stellate at first, rapidly losing the sharp points and furnished with a very sharp lamelliform supramarginal edge.
- (c) Higher, axially abundantly costate.
- (d) Columellar callus abundant and forming a slightly projecting inner lip, which may extend somewhat beyond the region of the umbilicus.

## BELLASTRAEA TENTORIFORMIS (Jonas)

*Astrea tentoriformis* Jonas 1845, *Trochus*, Zeit. Malak., 2, 66.

*Loc.*—Western Australia (type loc.): Albany; Bunbury; Rottnest; Shark Bay; Geraldton. South Australia: Point Sinclair.

*Remarks*—This large, high shell is common in Western Australia, but its South Australian record is based on a specimen from the western end of that State, which is the limit of its eastern range. The species is distinguished from *squamifera* by the larger size, higher shell and pink to violet columella.

## MICRASTRAEA AUREA (Jonas)

*Trochus aureum* Jonas 1844, Zeit. Malak., 2, 168.

*Loc.*—Western Australia (type loc.): Esperance; Albany; Rottnest; west of Eucla, 100 fms. South Australia: American River; both Gulfs, under weed-covered stones below low tide and on Razor Edge shells (*Pinna*); Glenelg; Normanville; Yorke Peninsula; Robe; Port MacDonnell, St. Francis Island; Point Sinclair; Streaky Bay; Beachport, 40 and 150 fms.; Eastern Cove, 5 fms., many alive; Troubridge; Port Lincoln, Investigator Straits, 15 fms. and 8 fms., alive down to 10 fms. Tasmania: common on rocky shores. Dredged alive in great abundance in seaweed off the sand-spit off Kingscote, Kangaroo Island, at about three to four miles from the shore in 9 fms., the larger ones covered with calcareous matter, the younger ones free; even more abundant in 5 fms.

## MICRASTRAEA RUTIDOLOMA (Tate)

*Turbo (Astraliium) rutidoloma* Tate 1893, Trans. Roy. Soc. S. Aust., 17, 192, pl. i, fig. 9.

*Loc.*—South Australia: at low tides, Moonta Bay (type loc.); Hardwicke Bay, 8 fms.; Reevesby Island; Arno Bay.

*Remarks*—Operculum shelly, thick, slightly angled at the columella side; and with a central weak depression much like *aurea*. The shell has an entirely different sculpture from *aurea*. Holotype, Reg. No. D.9965, S. Aust. Museum.

## Family EUTROPIDAE

## PHASIANELLA AUSTRALIS (Gmelin)

*Buccinum australis* Gmelin 1788, Syst. Nat., 3490, No. 173.

*Loc.*—South Australia (type loc.): both Gulfs; Beachport; Robe; Rapid Head; Kangaroo Island; Port Lincoln; Arno Bay; Venus Bay; Point Sinclair; Corny Point, plentiful in patches of *Cymodocea* weed in shallow water at such places as Fort Largs; Gulf St. Vincent; largest specimens from Corny Point and west coast of Yorke Peninsula; juveniles under algae-covered stones; dredged alive down to 10 fms.; Gulf St. Vincent, 6 fms.; Semaphore, 5 fms.; Hardwicke Bay, 10 fms. Western Australia—King George Sound, 10, 12, 15, 24, 28 and 35 fms.; 90 miles west of Eucla, 100 fms.; Fremantle, 6, 10 and 15 fms.; Albany; Bunbury, 15 fms.; Geraldton. Tasmania: general, on weeds. Victoria: Western Port; Port Fairy.

Variants are:

- (a) Colour of broad axial irregular dull red stripes—“*subsanguinea*” Pilsbry 1888.
- (b) Surface tessellated by revolving series of squarish red blotches—“*venusta*” Reeve 1862.
- (c) Narrow spaced spiral lines of close axial dashes and squares on an orange background.

Other synonyms which are named from varieties only are *tritonis* Chemnitz 1788, *bulimoides* Lamarck 1822 and *delicatula* Tenison Woods 1877.

## MIMELENCIUS VENTRICOSA (Swainson)

*Phasianella ventricosa* Swainson 1822, Appendix to Cat. Coll. Shells Bligh, 12.

*Loc.*—Victoria (type loc.): general. South Australia: both Gulfs; Beachport; Kangaroo Island; Port Lincoln; Yorke Peninsula; West Coast; Point Sinclair; Rapid Head, 10 and 12 fms.; Investigator Straits, 8, 10, 15 and 20 fms.; Yankalilla Bay, 15 fms.; Encounter Bay, 15 fms.; Thorny Passage, 25 fms., alive down to 10 fms. Western Australia: Bunbury; Albany; Esperance; Ellenbrook; Yallingup; Fremantle; Rottnest. Tasmania: North and West Coast. New South Wales: Port Jackson.

*Remarks*—Synonyms are *perdix* Wood 1828, *sanguinea*, *zebra* and *reticulata* Reeve, *inflata* and *obtusa* Swainson 1822.

Variants are:

- (a) Obliquely, axially conspicuously, broadly banded with chestnut, red and yellow, lineated with flesh colour—“*zebra*” Reeve.
- (b) Closely undulately painted throughout with brown lines and with flesh-coloured flames beneath the sutures, and shorter than the typical, “*reticulata*” Reeve.

## ORTHOMESUS ANGASI (Crosse)

*Phasianella angasi* Crosse 1864, Journ. de Conch., 344, pl. xiii, fig. 5.

*Loc.*—South Australia: Port Elliot (type loc.); both Gulfs; Beachport; Encounter Bay; Kangaroo Island; Port Lincoln; Yorke Peninsula; Point Sinclair; Venus Bay; Yankalilla Bay, 15 and 20 fms.; Rapid Head, 10 and 12 fms.; Hardwicke Bay, 8 and 10 fms.; Investigator Straits, 10, 15 and 20 fms.; Royston Head, 22 fms.; Wallaroo, 15 fms.; Yankalilla Bay, 12 fms., alive in shallow water and down to 22 fms. Western Australia: Bunbury; Ellenbrook; Rottnest; Albany; Yallingup; Esperance, Fremantle; Shark Bay; Carnarvon; Geraldton. Tasmania: North and West Coasts. Victoria: Western Port and Port Fairy.

*Remarks*—A very variable shell common at the type locality and vicinity, it is smaller than *rubens* Philippi which appears to be distributed in Northern Australia and the South Pacific, while *variegata* Lamarck is the Peronian species.

## PELLAX GABINIANA Cotton and Godfrey 1938

*Pellax gabiniana* Cotton and Godfrey 1938, Rec. S. Aust. Mus., 6, No. 2, 202, pl. xvii, fig. 12.

*Loc.*—South Australia: Yorke Peninsula; Royston Head (type loc.); Corny Point; Robe; Port Lincoln; Kangaroo Island. Victoria: Port Fairy. Western Australia: Albany; Rottnest.

*Remarks*—This species has been recorded from Southern Australia as *Phasianella kochi*, a South African shell, which is stouter and more solid in structure. The present species varies in colour pattern from the typical to the more common subsuturally axially flamed pattern, but all have the maculated band on the body whorl. Common in shell sand. Holotype, Reg. No. D.13414, S. Aust. Museum.

## PELLAX TOMLINI (Gatliff and Gabriel)

*Phasianella tomlini* Gatliff and Gabriel 1921, Proc. Mal. Soc., Lond., 14, 173, fig. 1, 2, 3.

*Loc.*—Western Australia (type loc.); Albany; Rottnest; Esperance; Hope-toun; King George Sound.

*Remarks*—The umbilical chink is closed in full adults. The shell differs from *gabiniana* in being more globose, spirally sculptured, thicker and with a different, contrasting, axial colour pattern. The comparison is made with paratypes of *tomlini* and holotype and paratypes of *gabiniana*.

**Pellax johnstoni** sp. nov.

Pl. xii, fig. 3, 4

Shell elongate oval, thin; whorls six, very slightly convex, smooth but for fine numerous sublenticular spiral striae; sutures linear, slightly descending at the aperture; aperture vertically ovate, slightly angulate above, outer lip simple, thin; inner lip simple, less curved than the outer lip, smooth, thickened, slightly excavate and scarcely effuse at the base; protoconch blunt, of two whorls, smooth, reddish-brown; body whorl with a white band below the suture, about one-fifth of the whorl, fading rapidly out anteriorly, crossed by nine axial brown bands, about one-half the width of their interspaces, slightly widening out at the anterior margin of the band; another white band gradually increasing in width anteriorly arises just below the angle of the aperture, and bounds the outer margin of the labium to the front edge of its effuse base, and is decorated throughout with oblique lines of reddish-brown spots. Height 6 mm., diameter 3.2 mm.

*Loc.*—Western Australia: Ellenbrook (type loc.); Hopetoun; Esperance. South Australia—Venus Bay.

*Remarks*—All specimens are typical and unlike any descriptions or figures of any allied species. Holotype, Reg. No. D14200. Named after Professor T. H. Johnston.

PELLAX VIRGO (Angas)

*Eutropia (Tricolia) virgo* Angas 1867, Proc. Zool. Soc., Lond., 115, pl. xiii, fig. 25.

*Loc.*—New South Wales: shell sand, Coogee Bay (type loc.); Port Jackson. South Australia: Guichen Bay; Robe.

*Remarks*—Rare in South Australia, only one or two specimens taken in the South-East.

PELLAX ROSEA (Angas)

*Eutropia (Tricolia) rosea* Angas 1867, Proc. Zool. Soc., Lond., 114, pl. xiii, fig. 24.

*Loc.*—New South Wales: shell sand Coogee Bay (type loc.); Port Jackson. South Australia: Beachport; Robe; MacDonnell Bay; numerous both Gulfs; St. Francis Island; dredged, Beachport, 40 fms.; Cape Borda, 55 fms.; Cape Jaffa, 130 fms., shallow water, alive down to 5 fms. Tasmania: general. Victoria: Western Port, Port Fairy. Western Australia: Yallingup; Ellenbrook; Hopetoun; King George Sound.

*Remarks*—Dredged specimens are buff-coloured. There are a number of variants amongst Southern Australian specimens, those from Rottnest being somewhat flattened, with waving axial colour flames.

- (a) Unicoloured deep rose-red, typical.
- (b) Distant, short, white narrow infrasutural flammules.
- (c) Equally or less distant dead white streaks from the suture extending almost completely axially across the body whorl.
- (d) Infrasutural flammules a spiral row of white spots well below the periphery, occasionally two rows, rarely joined with the infrasutural row by a white streak.
- (e) More elongate, and whorls more convex.
- (f) Body whorl somewhat flattened.
- (g) A white line replaces the row of white dots below the periphery.
- (h) Body whorl somewhat flattened, convex towards the base and with waving axials of red and white, best marked as crescents just below the suture and below the periphery, common at Rottnest.
- (i) Zigzag flames of red joining upper with lower alternate red spots, with intercalating red flames from intermediate red spots, foundation colour of a faint tint.

GABRIELONA NEPEANENSIS (Gatliff and Gabriel)

*Phasianella nepeanensis* Gatliff and Gabriel 1908, Proc. Roy. Vict., 21, (2), 366.

*Loc.*—Victoria: Flinders; Western Port; Ocean Beach; near Point Nepean (type loc.). South Australia: Port Lincoln; Robe.

*Remarks*—I succeeded in finding only two specimens in shell sand at Port Lincoln in 1936 when on the McCoy Expedition, and one at Robe. Some of our specimens of *Pellax virgo* are hard to separate from *nepeanensis* and need very careful examination before certain identification.

## Family COCCULINIDAE

## NOTOCRATER TASMANICA (Pilsbry)

*Acmaea tasmanica* Pilsbry 1895, Nautilus, 8, 128.

*Loc.*—Tasmania: Derwent Estuary, 10 fms. (type loc.), South and East in kelp roots. South Australia: Gulf St. Vincent, 10 fms.; St. Francis Island. Victoria: San Remo.

*Remarks*—*Notocrater meridionalis* Hedley 1903, from Port Kembla, New South Wales, 63 to 75 fms., is closely allied.

## TECTISUMEN TASMANICA (May)

*Cocculinella tasmanica* May 1919, Proc. Roy. Soc. Tas., 67, pl. xvii, fig. 25, 25a.

*Loc.*—Tasmania: East Coast, 40 to 70 fms. (type loc.). South Australia: Cape Jaffa, 130 fms.

*Remarks*—The single South Australian specimen recorded by Verco in 1907 as *Cocculina coercita* Hedley 1906 is still unique. From a series of Tasmanian specimens I am inclined to think that the present species is close to *coercita* Hedley from east of Sydney in 300 fms. (type loc.), but Hedley's species is narrower, flatter, with an almost flat base, differences which may be detected in the adult but not so easily in younger specimens. The South Australian specimen is intermediate between *tasmanica* and *coercita*, but it is here placed as *tasmanica*, to which it bears closer resemblance, pending the discovery of further material. *Tectisumen compressa* Suter 1908, from New Zealand, is also closely allied.

## TECTISUMEN MAYI Finlay

*Tectisumen mayi* Finlay 1926, Trans. New Zeal. Inst., 57, 374.

*Loc.*—Tasmania: Schouten Island, 40 fms. (type loc.); Maria Island, 50 fms.; Port Arthur, 50 to 70 fms. South Australia: Beachport, 110 fms.

*Remarks*—This is the species recorded by May from Tasmania under the name *clypidellaeformis* Suter 1908, a New Zealand shell belonging also to the genus *Tectisumen* Finlay 1926.

## Family LOTIIDAE

## CONACMEA SUBUNDULATA (Angas)

*Acmaea subundulata* Angas 1865, Proc. Zool. Soc. Lond., 155.

*Loc.*—South Australia: Port Lincoln (type loc.); Normanville; Yankalilla Bay, American River, Kangaroo Island; Hardwicke Bay; both Gulfs; Robe; Port MacDonnell, Streaky Bay, Murat Bay, St. Francis Island, dredged alive at Kangaroo Island; Eastern Cove, 9 fms.; Rapid Head, 9 and 11 fms.; Gulf St. Vincent, off Glenelg, 7 fms., many alive. Victoria: Barwon Heads; Port Phillip; Cape Otway.

*Remarks*—Three specimens are before me which have been compared with the types in the British Museum and pronounced by Verco as typical. The holotype specimens and those before me represent the maximum adult size, the average being about 5 mm. x 7 mm. x 8 mm. and some apparently just adult being 4 mm. x 5 mm. x 6 mm. Verco correctly recorded this species as *subundulata* Angas 1906. *Notoacmea* (*Conacmea*) *alta* Oliver 1926 is a synonym, his figure and description agreeing perfectly with specimens compared with the types of *subundulata* except that his, like many South Australian examples, is smaller.

This species occurs alive in quantity in the meadows of short *Cymodocea* found on the lower parts of the sand flats exposed at low tide, such as at Outer Harbour, South Australia, the specimens being consistently small, and possibly juvenile.

## Family CASSIDIDAE

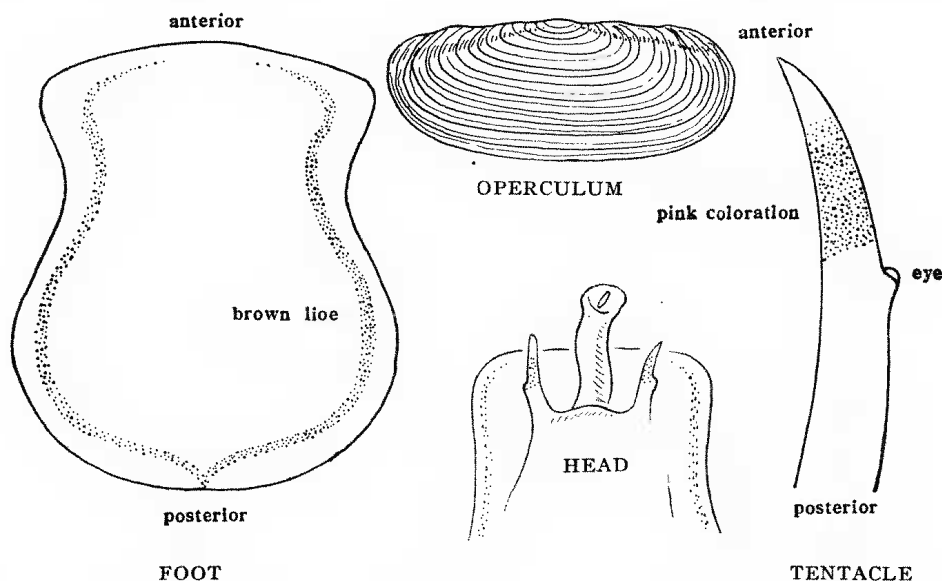
## HYPOCASSIS BICARINATA (Jonas)

*Cassid bicarinata* Jones 1839, Archiv. Naturg., 1, 343, pl. x, fig. 2.

Text fig.

*Loc.*—China (type loc., in error). South Australia: Gulf St. Vincent (type loc., designated); Minlacowie; Port Victor; Port Lincoln; American River; Lacedpede Bay; common in both Gulfs; dredged Yankalilla Bay, 12 fms.; Rapid Bay, 9 fms.; Rapid Head, 10 to 12 fms.; Investigator Straits, 15 fms.; Middleton, 23 fms.; Troubridge, 19 fms., alive down to 20 fms., but rare. Victoria: Port Fairy.

*Remarks*—When young the shell has a denticulated inner margin to the outer lip, the teeth being well marked, numbering 15 to 16, the most anterior at the commencement of the canal, and the most posterior being the largest. Sometimes there is an additional small tooth behind the large posterior one. The large posterior tooth is opposite the second transverse row of tubercles, which is more or less apparent on the inner lip. In larger shells, say about two-and-a-half inches



long, the outer lip is nearly or quite edentulous, but for the anterior or posterior teeth, and is much inflected. The young shell shows also longitudinal distant irregular, wavy or zigzag and even reticulated rusty lines. The animal has a large foot which is white, round behind, uniformly but less curved in front; on its upper surface is a brown line about two millimetres broad, complete posteriorly where it is produced to the edge. The tentacles are short, pointed, white at the distal ends and at the proximal half. The eyes are placed half-way down on the outer side, and just beyond these for one-half of the part distal to them the colour is pink. The under surface of the foot is quite white. There are varietal forms, micromorphs and macromorphs, which is not unusual in this family.

- (a) Smaller closely wrinkled, low spired form, "*decrensis*" Hedley 1923, from Kangaroo Island.
- (b) Thicker, smaller, heavier sculpture, spiral colour bands obsolete. This approaches *fimbriata* and is found rarely on the West Coast of South Australia.

(c) The typical *bicarinata* a large thinner shell, with subdued shoulder tubercles, irregular colour stripes of walnut brown, and the callus on the body whorl a mere glaze.

(d) A smaller dark-coloured form found in the sand amongst *Posidonia* weed.

The species is sometimes found in numbers on sandy beaches, 45 living specimens being counted by me at high tide mark on Sellicks Beach in 1935. The largest specimen measures 128 mm. in height and the average about 110 mm. for a fully grown adult.

#### HYPOCASSIS FIMBRIATA (Quoy and Gaimard)

*Cassis fimbriata* Quoy and Gaimard 1833, Voy. Astrolabe Zool., 2, 596, pl. xliii, fig. 7 to 8.

*Loc.*—Mariannes (type loc., error). Western Australia (type loc.): Albany; Esperance; Bunbury; Eyres Sand Patch; west of Eucla, 100 fms., alive.

*Remarks*—All our Western Australian specimens are much smaller than *bicarinata*, thicker and have wavy, axial, rust-coloured flames in the adult and juvenile, and the protoconch is larger, almost bulbous. They are consistently bicarinate with two rows of spiral sharp nodules. The 20 specimens before me show no intergradation, though a larger series might. The two specimens from 100 fms. are strongly bicarinate, one with a third weak carination below. This is the largest specimen I have seen and was recorded by Verco 1912 as "*fimbriata*," measuring 83 mm. in height. The average would be about 70 mm.

#### XENOGALEA PAUCIRUGIS (Menke)

*Cassis paucirugis* Menke 1843, Moll. Nov. Holl. Spec., 23.

*Loc.*—Western Australia (type loc.); Albany, Esperance, Bunbury, beach and 22 fms. South Australia: Robe; Beachport, 100 fms.

*Remarks*—This species is represented from South Australia by a few beach-worn specimens and one dredged fragment.

#### *Xenogalea mawsoni* sp. nov.

Pl. xii, fig. 1, 2

Shell large, thin, globose oval, spire moderately exerted, aperture wide, external varix thin; colour when fresh pink-flesh tint with a blackish-purple on the varix of the canal and about seven blotches of black-purple on the outside of the recurved labrum, fading away towards the dorsum as vanishing spiral flames; some have two spiral bands of orange blotches on the body whorl; protoconch of two-and-a-half finely punctate whorls followed by finely spirally striate early whorls, later becoming smooth with two very weak and shallow spiral grooves; body whorl keeled at the shoulder with numerous small nodules, beneath which series is a shallow channel; there are close accremental striae throughout; canal short, recurved; columella not wrinkled, with a broad weak central fold; a deep gutter running into the wide umbilicus; outer lip with a thin, weakly developed varix, scarcely folded back and smooth, without internal lirae. Height 80 mm., width 55 mm.

*Loc.*—Western Australia: 120 miles west of Eucla, 120 fms. (type loc.), also 75 fms.; 90 miles west of Eucla, 85 and 100 fms.

*Remarks*—These specimens were recorded by Verco 1912, Trans. Roy. Soc. S. Aust., 217 under the name *Cassidea pyrum* Lamarck, but they are a very different species. The relationship is rather with *paucirugis*, but they are quite distinct. They are larger, thinner, differently sculptured and coloured and have a thin, scarcely reflected, non-lirate outer lip. The specimens are now faded

to almost dead white, but signs of the colour pattern can be faintly discerned. Holotype, Reg. No. D.14201, S. Aust. Museum. Named after Sir. D. Mawson.

***Xenogalea denda* sp. nov.**

Shell, large, thin, globose, smooth; cream, with an extremely faint suggestion of rufous blotches; mouth white except on the lower outer lip, where there are pairs of chestnut blotches; body whorl smooth; outer lip narrowly reflected; columella with five weak plications above, then a narrow furrow followed by a strong fold running to the edge of the lobe. Height 82 mm., diameter 60 mm.

*Loc.*—Western Australia: Great Australian Bight, west of Eucla, 100 fms. (type loc.); also 250 fms.

*Remarks*—More globose than *stadialis* Hedley 1914, from between Gabo Island and Green Cape 50-100 fms., and practically without colour pattern.

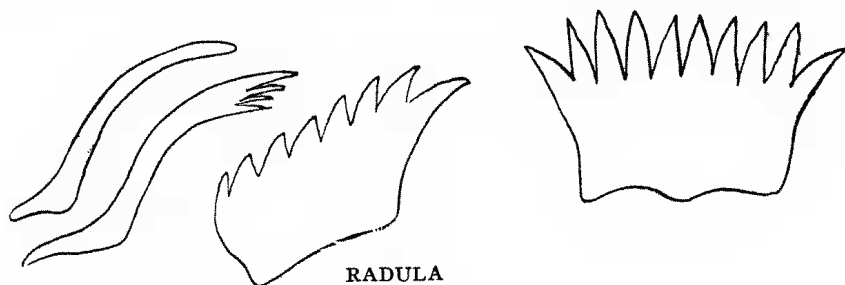
Holotype, Reg. No. D. 533, S. Aust. Museum.

**ANTEPHALIUM SEMIGRANOSUM (Lamarck)**

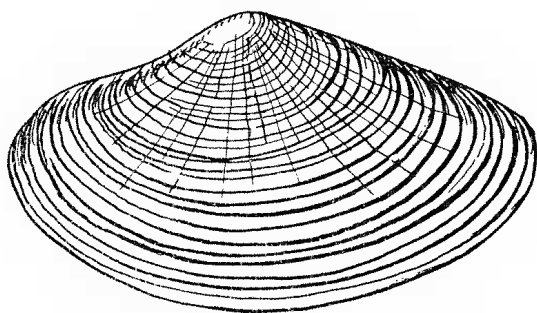
Text fig.

*Cassis semigranosum* Lamarck 1822, Hist. Anim. s. Vert., 7, 228.

*Loc.*—Tasmania: South (type loc.). South Australia: Yankalilla Bay; Aldinga Bay; Encounter Bay; Pondolowie Bay; Lacepede Bay; dredged Yankalilla Bay, 15 fms.; Newland Head, 20 fms.; Beachport, 100, 110, 150 and 200 fms.; Cape Borda, 55 and 62 fms.; Cape Jaffa, 90 and 130 fms.; St. Francis Island,



RADULA



OPERCULUM

15 to 20 fms. Western Australia: 80 miles west of Eucla, 80 fms.; King George Sound, 12 and 35 fms.; Hopetoun, 35 fms.; Bunbury.

*Remarks*—All the dredged specimens are dead shells, some from 100 fms. having a longer protoconch. An occasional specimen has a kind of varix formed at a distance of half a whorl or less from the aperture, due to a reflected and thickened lip prematurely formed. The radula teeth and operculum are figured here.

## ANTEPHALIUM ADCOCKI (Sowerby)

*Cassia adcocki* Sowerby 1896, Proc. Mal. Soc. Lond., 2, 14, text fig.

*Loc.*—South Australia: Yankalilla Bay (type loc.); Kingscote; Troubridge (Riddle); Normanville; Port Morowie; Port Elliot; Beachport, 40 fms. (fragment). Western Australia: 90 miles west of Eucla, 100 fms.

*Remarks*—The largest specimen I have seen, 42 mm. in height, is in G. Pattison's Collection, taken at Troubridge.

## Family VOLUTIDAE

## MELO MILTONIS (Gray)

Pl. xiii

*Voluta miltonis* Gray 1833, Griffiths Animal Kingdom, 12, Mollusca, pl. xxix.

*Cymbium miltonis* Gray, Kuster 1841, Conch. Cab., 5, (2), 213, p<sup>l</sup>. xlii, fig. 1.

*Voluta miltonis* Deshayes, Anim. Sans Vert., 2nd edit., 10, 406, sp. 46.

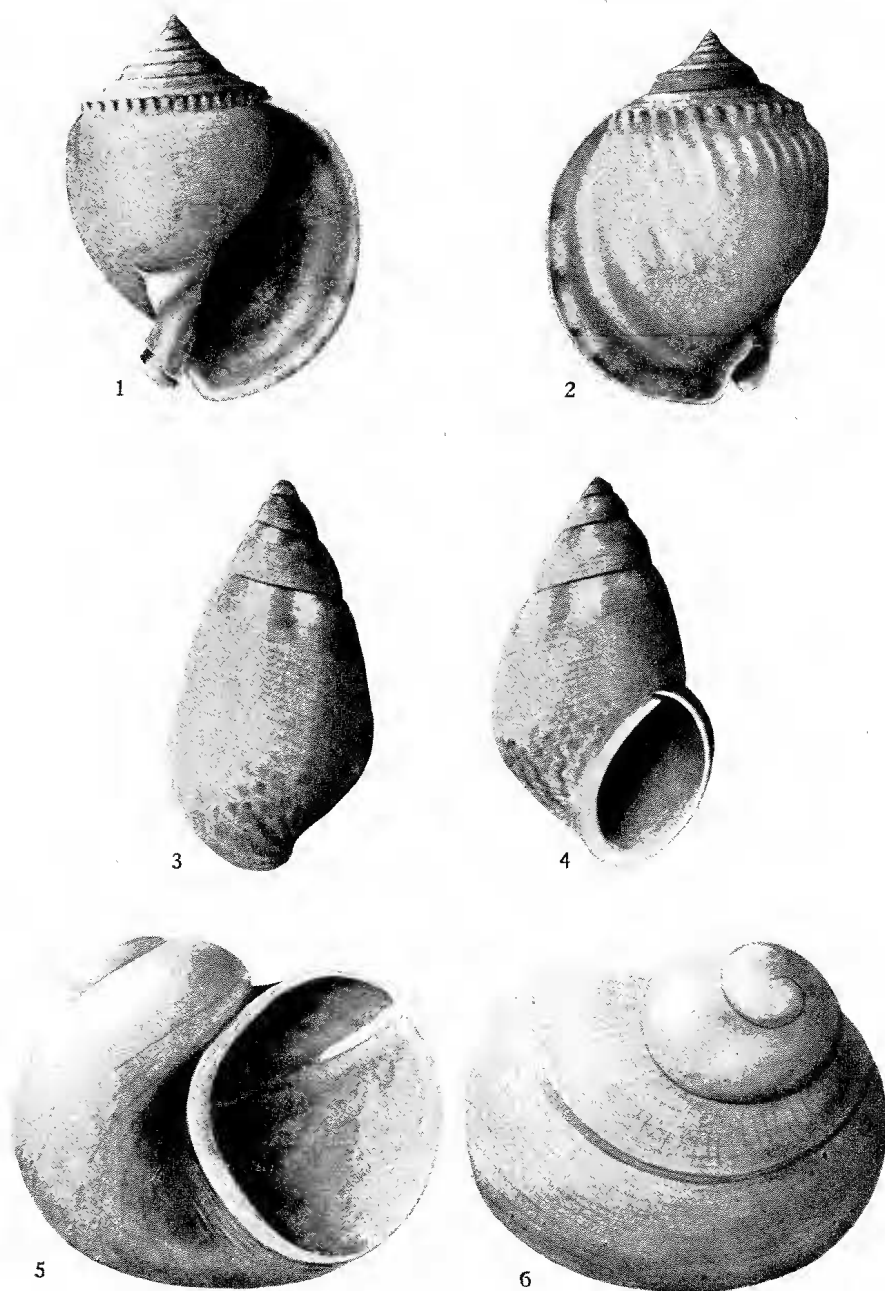
*Melo miltonis* Gray, Broderip, Thes. Conch., 1, 415, sp. 7, pl. lxxxiii, fig. 24, 25.

*Loc.*—South Australia: Cape Thevenard; Murat Bay; Streaky Bay; Fowlers Bay; St. Peters Island; Laura Bay; Eyre Island; Cape Vivonne. Western Australia: 90 miles west of Eucla, 60 miles off shore, 95 fms.; Eucla, 90 fms.; King George Sound.

*Remarks*—The original figure in Griffith and Pidgeon (Griffith's Edition of Cuvier's Animal Kingdom) is not very good, but there is no other Melon shell at all like this species and Broderip 1855 reduced his *cylindratus* to a synonym. Reeve 1861, Conch. Icon., 13, pl. xvi, fig. 8 a and b, shows a typical specimen from Swan River, Western Australia, not unlike that of Griffith and Pidgeon's. Sowerby Thes. Conch., 1, pl. lxxxiii, fig. 24 and 25, gives accurate figures of a specimen from the same locality like that figured by the writer from Cape Thevenard, in Rec. S. Aust. Mus., 5, (4), 506, fig. 1 and 2. A specimen taken alive at St. Peters Island has a big muscular fleshy foot, light chocolate coloured, veined with cream and the upper parts of the body cream-coloured. A photograph of the animal just emerging from the shell is reproduced here (pl. xiii). The shell is 260 mm. in height and 160 mm. wide. During and between the months of September to December the Baler congregates in groups of 40 to 50 in certain definite areas on our west coast, when egg-laying takes place. The males and females have shells of slightly different size and shape, which has led some to think that there are two species of Baler along our coast. Queensland species are *umbilicatus* Sowerby 1825, Gen. Moll., pl. ccliv, a wide-mouthed form, closely coronate, with spikes incurved, based on a Moreton Bay shell; the commoner *georginae* Gray 1833, originally named from a Swan River shell, and the closely allied *mucronatus* Sowerby 1847 from Moreton Bay.

## SUMMARY

The exact geographical and vertical localities of 77 South Australian Gastropods are given. One new genus, *Eudaronia*, and four new species, *Scissurona vincentiana*, *Pellax johnstoni*, *Xenogalea mawsoni* and *X. denda* are described. Many variations of the typical shell and observations on the living animal and radula are also given.



Gwen D. Walsh

Fig. 1 and 2 *Xenogalea maresoni* sp. nov., x 0.6    3 and 4 *Pellax johnstoni* sp. nov., x 8  
5 and 6 *Scissurona vincentiana* sp. nov., x 8